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RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/031,496A

DATE: 05/13/2003 TIME: 16:19:32

Input Set : A:\PCT99-45.txt

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3 <110 > APPLICANT: Adney, William S.
              Decker, Stephen R.
      5
              Lantz-McCarter, Suzanne
      ŧĵ
              Paker, John O.
      '?
              Vinzant, Todd B.
      8
              Nieves, Rafael A.
      9
              Himmel, Michael E.
     11 - 120 - TITLE OF INVENTION: CELLOBIOHYDROLASE REDUCED GLYCOSYLATION VARIANTS: CBHIN45A;
              CBHIN270A; AND CBHIN384A
     14 - 130 - FILE FEFERENCE: HIMMEL NFEL IR# 99-45
C--> 16 <140> CURRENT APPLICATION NUMBER: US/10/031,496A
C--> 17 <141> CURRENT FILING DATE: 2003-05-06
     19 -160 NUMBER OF SEQ ID NOS: 4
     21 -170 > SOFTWARE: FatentIn Ver. 2.0
     23 - 210 - SEQ ID NO: 1
     24 - 211 / LENGTH: 496
     25 - 212> TYPE: PRT
    16 + 213> ORGANISM: Trichoderma reesei
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                                         25
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    53 Phe Asp Val Asp Val Ser Gln Leu Pro Cys Gly Leu Asn Gly Ala Leu
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    56 Tyr Phe Val Ser Met Asp Ala Asp Gly Gly Val Ser Lys Tyr Pro Thr
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    59 Asn Thr Ala Gly Ala Lys Tyr Gly Thr Gly Tyr Cys Asp Ser Gln Cys
                      165
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   62 Pro Arg Asp Leu Lys Phe Ile Asn Gly Gln Ala Asn Val Glu Gly Trp
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                                       185
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DATE: 05/13/2003

Imput Set : A:\PCT99-45.txt

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60 Cys Cys Ser Gli Met Asp Ile Trp Glu A	Ala Asn Ser Ile Ser Glu Ala 220
71 Leu Thr Pro His Pro Cys Thr Thr Val G 7. 2.55 250	Gly Gln Glu Ile Cys Glu Gly 235 240
	250 255
77 Amp Pro Asp Gly Cys Asp Trp Ash Pro T 75 260 265	270
80 Page Tyr Gly Pro Gly Ser Ser Phe Thr I 81 275 280	285
83 The Val Val Thr Gln Phe Glu Thr Ser G 84 290 295	300
86 Val Gir Asr Gly Val Thr Phe Glr Gln E 87 305 310	315 320
** *	330 335
9. Glu Phe Gly Gly Sor Ser Phe Ser Asp I 93 345	3 ° 0
95 Lys bys Ala Thr Ser Gly Gly Met Val I 96 355 360	365
98 Asy Tym Tym Ala Arm Met Leu Tmp Leu A 99 375	380
101 Glu Thr Ser Ser Thr Fro Gly Ala Val 102 385 590	arg Giy Ser Cys Ser inr Ser 395 400
104 Ser Gly Val Pro Ala Gln Val Glu Ser 105 405	Gln Ser Pro Asn Ala Lys Val 410 415
107 Thr Phe Ser Asn Ile Lys Phe Gly Pro 108 420 425	
110 Ser Gly Gly Asn Pro Pro Gly Gly Asn 111 435 440	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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116 Tyr Gly Gln Cys Gly Gly Ile Gly Tyr 117 465 470	Ser Gly Pro Thr Val Cys Ala 475 480
	Pro Tyr Tyr Ser Gln Cys Leu 490 495
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135 Val Ile Asp Ala Asn Trp Arg Trp Thr 136 35 40	His Ala Thr Asn Ser Ser Thr 45

DATE: 05/13/2003 TIME: 16:19:32 PATENT APPLICATION: US/10/031,496A

Inpu: Set : A:\PCT99-45.txt

138 139	Asn	Cys 50	Tyr	Asp	ыгу	Asn	ľhr 55	Tip	Ser	Ser	Thr	Leu 60	Cys	Pro	Asp	As r.
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147 148	Thr	31.n	Ser	Ala 100	Glri	Γλε	Ash	Val	G17 105	Ala	Ard	Leg	Tyr	Leu 110	Met	Ala
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1				1/80 180					186					190		
166			195	Ser				300					205			
169	-	210		Glu		-	215	·				210				
17.	225			His		230				-	235					34Ĉ
175	_	_		Gly	∴45		_		_	250	_	-	_	-	255	
178				Gly 260					265					270		
1 ÷ 1		_	275	Pro	_			$\mathbb{R}^{(1)}$			_		285	_	_	
164		290		Thr			295			_		300		_	_	
187	305			Gly		310					315					320
190				Asr.	325					330					335	
193				Gly 340 Thr					345					350		
196	_	_	355			_	_	360					365		_	_
199		370		Ala			375					380				
202	385			Pro		390					395					400
205				Asn	405					410					415	
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DATE: 05/13/2003 PATENT APPLICATION: US/10/031,496A TIME: 15:19:32

Inpu: Set : A:\PCT99-45.txt

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.:13	Ser	-317	Thr	Im	::ys	Sln	Val	Lieta	Asm	Pro	Tyr	Tyr	3er	Gln	Cys	Leu
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	Gln	Lys	Эγε	Ser	:er	-317.	Gly	Thr	Cys	Thir	Gln	Gln	Thr	Gly	3er	Val
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14H				11)(:					105					110		
	Ser	Asp		Thr	Tyr	Glri	Glu	Fhe	Thr	Leu	Leu	GTA		Glu	Ph∈	Ser
5 1			115					12:0					125			
	Phe		Val	Asr	Val	Ser		Leu	Pro	Cys	Gly		Asn	G.l.y	Ala	Leu
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260	12	r	70	T	165	DI	T1.	70	.2.1	170	70 7	70	,, ,	a i	175	(T) .
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263	(~1·.	11	17.0.20	180	7 ~ ~	70~	70 7 -	Asn	185	71	Tla	C1	(71	190	/21	0
266	UI U	PLO	195	ser	ASII	ASII	Ala	200	1111	PT À	rre	ЭΙУ	205	nis	GTÄ	261
	Cus	Cus		Clu	Mot	Acn	T1c.	Trp	C1.	лΊ¬	7 cr	Can		Oan	(2) 11	Λ l ¬
	cys			13 T C		Asp						220		261	או דבו	MId
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	225	T 11T		1114	. 10	230	TIIT	1111	v (3.1	· > 1 y	235	0.1 U	.r 1.€	د ړر.	<u>برا لما ل</u>	240
		Gly	17178	(21 tr	Clv		Tur	Ser	Aen	Asn		Tur	G' v	(21 17	Thr	
275	- I-	O ± y	270	J ± 3	.145		- y -	2.01	. 10. [250	* * * 4	- y -	<u>.</u> . y	y	255	U y U
	Asn	Pro	Asp	Glv		Asn	Tro	Asn	Pro		Ara	Len	Glv	Asn		Ser
278	· · · · · · ·		. 10 F.	260	2 1 2	٦		11011	265	- 1 -	* * * * * *	L. u	.J.1. Y	270	4444	D.C.I
	Phe	Tvr	Glv		Glv	Ser	Ser	Ph.e		Len	Aso	Thr	Thr		Lvs	Len
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	Thr	Val		Thr	Gln	Phe	Glu	Thr	Ser	Glv	Ala	Tle		Ara	Tur	Tur
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PATENT APPLICATION: US/10/031,496A TIME: 16:19:32

DATE: 05/13/2003

Input Set : A:\PCT99-45.txt

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	'	370					- ÷/5					380	ì			
507.3	. Giu . 385	Thr	Ser	Ser	Thr	Pro	Gly	A.a	Val	Arg	Gly	Ser	Cys	Ser	Thr	Ser
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7.0.				4.30					425					130		
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J16	Tyr	Gly	Gln	Cys	Gly	Gly	Ile	Gly	Tyr	Ser	Gly	Pro	Thr	Val	Cys	Ala
/	400					4/0					475					400
319	Ser	ret A	Thr	Thr	Cys	Gln	Val	Leu	Asn	Pro	Tyr	Tyr	Ser	Gln	Cys	Leu
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324 325 336	<21 <21 <21	1. LI 2. TY 3. OF	ENGTI YPE: RGANI	H: 49 PET ISM:	96 Tric	chode	erma	rees	sei						400	
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324 325 346 308 329 330 332	<21: <21: <400 Gln 1	1.→ LH 2.→ TY 3.→ OH 0.→ SH Ser	ENGTI YPE: RGANI EQUEN Ala	H: 49 PFT ISM: NCE: Cys Ser	P6 Tric 4 Thr 5	Leu	Gln	Ser	Glu	10					Thr	
304 305 346 308 329 330 332 333	<21: <21: <400 Gln 1 Gln	1. LI 2. TY 3> OF 5> SE Ser Lys	ENGTI YPE: RGANI EQUEN Ala Cys	H: 49 PET ISM: NCE: Cys Ser 20	Tric 4 Thr 5 Ser	Leu Gly	Gln Gly	Ser Thr	Glu Cys 25	10 Thr	Gln	Gln	Thr	Gly	Thr 15 Ser	Val
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324 325 326 329 330 332 333 335 336 338 341 342 344 345 347 348 350	<21: <21: <400 Gln 1 Gln Val Asn Glu 65 Thr	1. LH 22 TY 32 OF 33 OF 34 OF 55 Ser Lys Lys Lys The Tyr Gln Asp	ENGTHYPE: RGAN: RGAN: RGAN: Cys Ala Cys Asp 35 Tyr Cys Gly Ser Thr	PFT ISM: ISM: ICE: Cys Ser 20 Ala Asp Ala Val Ala 100	Trice 4 Thr 5 Ser Asn Gly Lys Thr 85 Gln	Leu Gly Trp Asn Asn 70 Thr	Gln Gly Arg Thr 55 Cys Ser Asn	Ser Thr Trp 40 Trp Cys Gly Val	Glu Cys 25 Thr Ser Leu Asn Gly 105	10 Thr His Ser Asp Ser 90 Ala	Gln Ala Thr Gly 75 Leu Arg	Gln Thr Leu 60 Ala Ser Leu	Thr Asn 45 Cys Ala Ile Tyr	Gly 30 Ser Pro Tyr Gly Leu	Thr 15 Ser Ser Asp Ala Phe 95 Met	Val Thr Asn Ser 80 Val Ala
324 325 326 329 330 332 333 335 336 338 341 342 344 345 347 348 350 351	<pre><21 <21: <400 Gln 1 Gln Val Asn Glu 65 Thr Thr</pre>	1. LH 22 TY 33 OF 35 OF 50 Ser Lys Lys The Tyr Gln Asp	ENGTHYPE: RGAN: RGAN: RGUEN Ala Cys Asp 35 Tyr Cys Gly Ser Thr	PET ISM: ISM: ISM: ISM: ISM: ISM: ISM: ISM:	Trice 4 Thr 5 Ser Asn Gly Lys Thr 85 Gln	Leu Gly Trp Asn Asn 70 Thr Lys	Gln Gly Arg Thr 55 Cys Ser Asn	Ser Thr Trp 40 Trp Cys Gly Val Phe	Glu Cys 25 Thr Ser Leu Asn Gly 105 Thr	10 Thr His Ser Asp Ser 90 Ala Leu	Gln Ala Thr Gly 75 Leu Arg	Gln Thr Leu 60 Ala Ser Leu Gly	Thr Asn 45 Cys Ala Ile Tyr Asn	Gly 30 Ser Pro Tyr Gly Leu 110 Glu	Thr 15 Ser Ser Asp Ala Phe 95 Met	Val Thr Asn Ser 80 Val Ala Ser
324 325 326 329 330 332 333 335 336 338 341 342 344 345 347 348 350 351 353	<pre><21 <21: <400 Gln 1 Gln Val Asn Glu 65 Thr Thr Ser Phe</pre>	1. LH 22 TY 32 OF 33 OF 34 OF 35 OF 36 OF	ENGTHYPE: RGAN: RGAN: RGUEN Ala Cys Asp 35 Tyr Cys Gly Ser Thr	PET ISM: ISM: ISM: ISM: ISM: ISM: ISM: ISM:	Trice 4 Thr 5 Ser Asn Gly Lys Thr 85 Gln	Leu Gly Trp Asn Asn 70 Thr Lys	Gln Gly Arg Thr 55 Cys Ser Asn	Ser Thr Trp 40 Trp Cys Gly Val Phe	Glu Cys 25 Thr Ser Leu Asn Gly 105 Thr	10 Thr His Ser Asp Ser 90 Ala Leu	Gln Ala Thr Gly 75 Leu Arg	Gln Thr Leu 60 Ala Ser Leu Gly	Thr Asn 45 Cys Ala Ile Tyr Asn	Gly 30 Ser Pro Tyr Gly Leu 110 Glu	Thr 15 Ser Ser Asp Ala Phe 95 Met	Val Thr Asn Ser 80 Val Ala Ser
324 325 326 329 330 332 333 335 336 338 341 342 344 345 347 348 350 351 353 354	<pre><21 <21: <400 Gln 1 Gln Val Asn Glu 65 Thr Thr Ser Phe</pre>	1. LH 22 TY 32 OF 33 OF 34 OF 35 OF 36 OF 36 OF 36 OF 37 OF 38 OF	ENGTHYPE: RGAN: RGAN: RGAN: Cys Asp 35 Tyr Cys Gly Ser Thr 115 Val	H: 49 PFT ISM: ISM: Cys Ser 20 Ala Asp Ala Val Ala 100 Thr	Trice 4 Thr 5 Ser Asn Gly Lys Thr 85 Gln Tyr Val	Leu Gly Trp Asn 70 Thr Lys Gln	Gln Gly Arg Thr 55 Cys Ser Asn Glu Gln:	Ser Thr Trp 40 Trp Cys Gly Val Phe 120 Leu	Cys 25 Thr Ser Leu Asn Gly 105 Thr	Thr His Ser Asp Ser 90 Ala Leu Cys	Gln Ala Thr Gly 75 Leu Arg Leu Gly	Gln Thr Leu 60 Ala Ser Leu Gly Leu 140	Thr Asn 45 Cys Ala Ile Tyr Asn 125 Asn	Gly 30 Ser Pro Tyr Gly Leu 110 Glu	Thr 15 Ser Ser Asp Ala Phe 95 Met	Val Thr Asn Ser 80 Val Ala Ser Leu
324 325 326 329 330 332 333 335 336 338 341 342 344 345 347 348 350 351 353 354	<pre><21 <21: <400 Gln 1 Gln Val Asn Glu 65 Thr Thr Ser Phe</pre>	1. LH 22 TY 32 OF 33 OF 34 OF 35 OF 36 OF 36 OF 36 OF 37 OF 38 OF	ENGTHYPE: RGAN: RGAN: RGAN: Cys Asp 35 Tyr Cys Gly Ser Thr 115 Val	H: 49 PFT ISM: ISM: Cys Ser 20 Ala Asp Ala Val Ala 100 Thr	Trice 4 Thr 5 Ser Asn Gly Lys Thr 85 Gln Tyr Val	Leu Gly Trp Asn 70 Thr Lys Gln	Gln Gly Arg Thr 55 Cys Ser Asn Glu Gln:	Ser Thr Trp 40 Trp Cys Gly Val Phe 120 Leu	Cys 25 Thr Ser Leu Asn Gly 105 Thr	Thr His Ser Asp Ser 90 Ala Leu Cys	Gln Ala Thr Gly 75 Leu Arg Leu Gly	Gln Thr Leu 60 Ala Ser Leu Gly Leu 140	Thr Asn 45 Cys Ala Ile Tyr Asn 125 Asn	Gly 30 Ser Pro Tyr Gly Leu 110 Glu	Thr 15 Ser Ser Asp Ala Phe 95 Met	Val Thr Asn Ser 80 Val Ala Ser Leu

RAW SEQUENCE LISTING ERROR SUMMARY FATENT AFPLICATION: US/10/031,496A

TATE: (5/13/2003 TIME: 1(:19:33

Input Set : A:\PCT99-45.txt

Gitput Set: N:\CRF4\05132003\J031496A.raw

Invalid Line Length:

The rules require that a line not exceed 72 characters in length. This includes spaces.

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VERIFICATION SUMMARY

DATE: 05/13/2003 PATENT APPLICATION: US/10/031,496A TIME: 16:19:33

Input Set : A:\PCT99-45.txt

Output Set: N:\CRF4\05132003\J031496A.raw

L:16 M:270 C: Current Application Number differs, Replaced Application Number

L:17 M:271 C: Current Filing Date differs, Replaced Current Filing Date